HEALTH AND SAFETY

Respirator Fit Testing

Model 8026
Particle Generator

Operation and Service Manual

1980319, Revision H
December 2010

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Particle Generator

Operation and Service Manual

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TSI Incorporated
500 Cardigan Road
Shoreview, MN 55126
USA

E-mail address:
answers@tsi.com
Web site:
http://www.tsi.com

U.S.
Sales and Customer Service:
(800) 874-2811 / (651) 490-2811
Fax:
(651) 490-3824

INTERNATIONAL
Sales and Customer Service:
(001 651) 490-2811
Fax:
(001 651) 490-3824

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Address
TSI Incorporated / 500 Cardigan Road / Shoreview, MN 55126 / USA

Fax No.
(651) 490-3824

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AVAILABLE APPLICATION NOTES

To obtain any of the Application Notes, contact TSI at:
U.S. (800) 874-2811/(651) 490-2811, Fax: (651) 490-3824
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These Application Notes can also be found under TSI's web site:
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SAFETY INFORMATION

The Model 8026 Particle Generator includes a high-temperature safety switch. If the generator overheats, this switch shuts off the unit permanently, and it must be returned to TSI for servicing.

Chapter 1

Unpacking and Parts Identification

Unpacking the Particle Generator

Carefully unpack the Model 8026 Particle Generator and accessories from the carrying case. Use the tables and illustrations below to make certain that there are no missing components. Contact TSI immediately if anything is missing or damaged.

Table 1-1: Model 8026 Particle Generator Component Parts

Quantity	Item Description	Part/Model
1	Particle generator	8026
1	Particle generator power cord	1303567
1	Package of 100 salt tablets	2918035
1	Model 8026 Particle Generator Operation and Service Manual	1980319

Parts Identification for the Particle Generator

Figure 1-1 identifies the parts of the Model 8026 Particle Generator. Please become familiar with these components before proceeding.

Figure 1-1

Replacement Parts and Supplies

The following items are sold by TSI as replacement parts and supplies for the Model 8026 Particle Generator.

Table 1-2: Replacement Parts and Supplies

Quantity	Item Description	Part/Model
1	Package of 100 salt tablets	2918035
1	Storage lid for reservoir	2002030
1	Power cord (North America)	1303567
1	Atomizer assembly	2401041

Chapter 2

Setting Up and Operating the Model 8026 Particle Generator

Introduction

The Model 8026 Particle Generator is intended to provide a supplementary particle source when performing quantitative respirator fit tests using the TSI PORTACOUNT Respirator Fit Tester. The following setup and operating instructions presume this intended usage.

This does not preclude, however, using the Model 8026 Particle Generator for other applications where you desire to generate a moderate concentration of poly-disperse particles. Some general notes on alternate uses for the Model 8026 are found at the end of this chapter.

Before setting up the Model 8026 Particle Generator, it is important to select a suitable location for fit testing.

Selecting a Fit Testing Location

The Model 8026 Particle Generator produces particles which supplement the naturally occurring particles in the air. When using the PORTACOUNT, TSI requires that you operate the Model 8026 in order to provide sufficient particle concentration. The particle generator may also be used with the PORTACOUNT Plus if you are unable to obtain the minimum particle concentration (1000 pt/cc).

For the generator to function properly, you must operate the generator and conduct the fit tests in an enclosed area. A medium-sized conference room normally is a suitable location. The particle generator does not function efficiently in an open cubicle area or a very large conference room.

Setting up the Model 8026 Particle Generator

The particle generator supplements the naturally occurring particles in the room environment. Follow the steps below to set up the particle generator:

1. Fill the reservoir jar with clean tap water to the fill line. It is helpful use hot water to help the salt tablet dissolve more quickly.

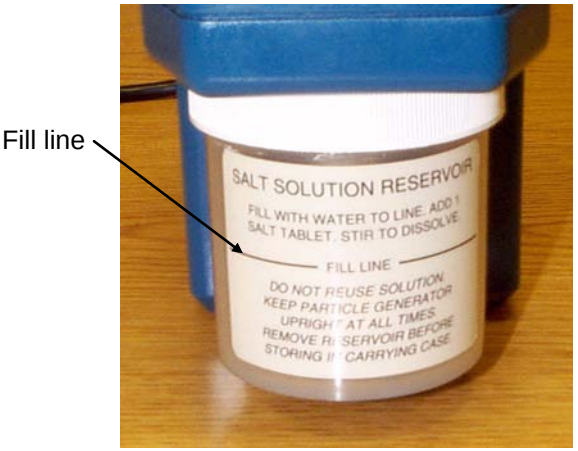

Figure 2-1

2. Drop one salt tablet into the reservoir. Each tablet contains 1.0 grams of salt. Break the tablet before dropping it into the water to dissolve it more quickly.

3. Place the temporary cover tightly on the reservoir and shake it gently to dissolve the salt tablet.

4. Once the solution is mixed, remove the temporary cover and screw the reservoir onto the particle generator. See Figure 2-1.

5. Place the particle generator on the floor in a corner of the testing room. Make sure the ventilation louvers on the back and bottom of the generator are not obstructed, as this could cause the instrument to overheat.

Caution
Do **not** place the Particle Generator on the table or benchtop. Vibrations from the internal compressor may cause the generator to move across the table. If left unattended, the generator could fall on the floor resulting in damage to the instrument.

6. Plug the female end of the power cord into the receptacle on the back of the particle generator. Plug the male end into a grounded wall outlet and turn on the power to the generator. The power switch is located next to the power cord receptacle. See Figure 2-2.

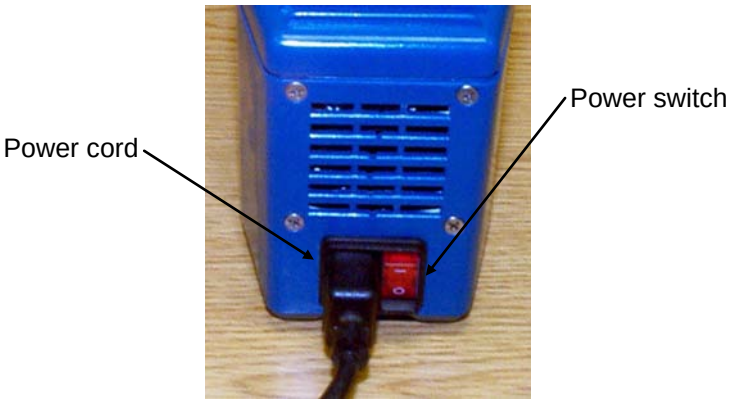

Figure 2-2

You must run the particle generator in the testing room, with the door closed, for at least 10 minutes before you begin fit testing to allow the particle count to stabilize. You must operate the generator in an upright position at all times, and leave it running until all fit tests for the day are complete.

One reservoir full of salt solution will last from 8 to 16 hours, depending on the generator setting. You can save and re-use the solution if you wish. However, do not mix old solution with fresh solution. If you need to mix new solution, first discard whatever remains in the reservoir.

If you wish to re-use the solution, be sure to detach the reservoir from the generator, cover it tightly with the temporary cover, and store it in its designated space inside the carrying case.

Caution
Never attempt to store the particle generator in the carrying case with a full or partially-filled reservoir attached, as the solution will leak out and damage the generator and/or carrying case.

Operating the Model 8026 Particle Generator

The Model 8026 particle generator operates without intervention once you turn on the power. However, you can adjust the output to increase particle concentration.

Adjusting the Particle Generator Output

The Model 8026 is set in the factory to a normal operating pressure. This will produce an aerosol output concentration that is appropriate for most environments. If higher counts are needed, you can increase the output by turning the output adjustment screw 1/2 turn clockwise. If necessary, you can adjust the output further by making additional turns of the output adjustment screw. See Figure 2-3.

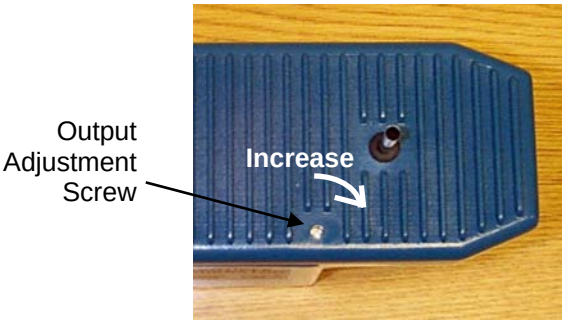

Figure 2-3

To restore the output to the factory setting, turn the screw completely clockwise to maximize the aerosol flow. Then, make three (3) complete counterclockwise turns. The screw should turn easily. Do **not** force it.

Alternate Uses for the Particle Generator

The Model 8026 Particle Generator may be used as a generalized source of poly-disperse particles in an environment. When used for other applications, the following precautions must be observed:

- The output of the generator may be directed to a specific location by attaching a short ¼" ID tube to the output located on the top.
- The tubing must be kept as short as possible, no longer than 24". The tubing creates a pressure drop which will severely limit the generator output.
- The adjustment screw may be used to increase the generator output to the maximum to compensate for the particle loss.

Chapter 3

Maintenance

Routine Maintenance

The Model 8026 Particle Generator requires very little maintenance. Cleanliness is the single most important maintenance requirement. To ensure trouble-free operation of the generator, do the following:

- Use compressed air to blow out accumulated salt from inside the generator case. Blow air into the louvers located on the back of the generator to clean salt from the cooling fan. Blow air into the bottom of the generator through the cooling louvers.

Caution
This cleaning maintenance step is critical to maintaining trouble-free operation of the generator.

- Wipe up any salt solution spills immediately.
- Periodically wipe down the outside surface of the generator using a damp cloth.
- After each use, shut off the generator, remove the salt solution reservoir, and then switch the generator back on for 40 seconds. This will purge salt solution from the unit and reduce contamination of the carrying case.

No other routine periodic maintenance is required. If you notice a decrease in output, you may need to clean the atomizer nozzle. Follow the procedure below.

Cleaning the Atomizer Nozzle

1. Turn the particle generator off. Remove the salt solution reservoir.
2. Disassemble the atomizer jet assembly following the order indicated in Figure 3-1. The retainer that holds the parts of the jet together can be difficult to remove. If necessary, use pliers to pull down on the tab with a *gentle* rocking motion. The jet assembly incorporates one small O-ring. Set it in a safe place.

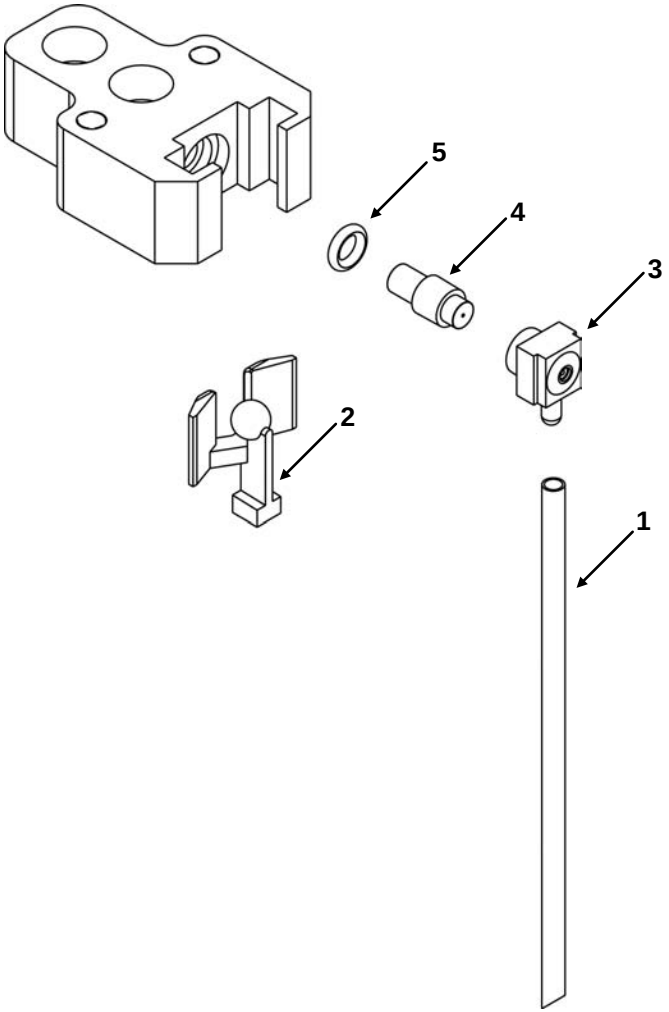

Figure 3-1

3. Use mild soap and warm water to clean the jet assembly parts. Examine the orifice for plugging. Rinse a second time if necessary. Either use clean compressed air to dry the parts, or air dry them.

***Note**: The orifice is easily damaged. Do **not** insert anything in the orifice in an attempt to clean it.*

4. Reassemble and install the atomizer jet, making sure you replace the O-ring. When you replace the retainer, make sure it is pushed in completely.
5. Attach the draw tube.
6. Test the generator for proper operation (output) using tap water.

Chapter 4

Troubleshooting

This chapter describes the symptoms, possible causes and recommended solutions for common problems encountered with the Model 8026 Particle Generator.

Some common problems you may encounter include:

Symptom	Possible Cause	Corrective Action
Low particle counts	The particle generator is not running.	Turn on the power to the particle generator.
	The salt solution is mixed incorrectly.	Refer to the mixing instructions in Chapter 2.
	The salt solution reservoir is low or empty.	Mix a new batch of solution and fill the reservoir.
	The atomizer head on the particle generator is clogged.	Clean the atomizer head. Refer to the maintenance procedure in the previous chapter.
	The particle generator pressure is set too low.	Adjust the pressure to a higher setting, as necessary. Refer to the procedure in Chapter 2.
Low particle counts (cont.)	The testing room is inappropriate. • It is too large • It is not a closed room • It has too high an air exchange rate	If the room is too large or not closed, select another location. If the air exchange rate is too high, increase the output of the particle generator.
No aerosol output	The compressor does not start when turned on. (Red light comes on okay).	Return the generator to TSI for servicing.

Appendix A

Specifications

The Model 8026 Particle Generator specifications are as follows. Specifications are subject to change without notice.

Size	10 in. x 4 in. x 5.25 in. (25.4 cm x 10.1 cm x 13.3 cm)
Weight.....	2.75 lb (1.25 kg)
Generated Particle Statistics (using 2% NaCl solution in distilled water)	
Count median diameter (CMD)	0.04 micrometers (nominal)
Geometric standard deviation (GSD).....	2.2 (nominal)
Operating Voltage.....	115 or 230 VAC (check label on unit)
Warranty	One year on workmanship and materials

TSI Incorporated – 500 Cardigan Road, Shoreview, MN 55126 U.S.A

USA	Tel: +1 800 874 2811	E-mail: info@tsi.com	Website: www.tsi.com
UK	Tel: +44 149 4 459200	E-mail: tsiuk@tsi.com	Website: www.tsiinc.co.uk
France	Tel: +33 491 11 87 64	E-mail: tsifrance@tsi.com	Website: www.tsiinc.fr
Germany	Tel: +49 241 523030	E-mail: tsigmbh@tsi.com	Website: www.tsiinc.de
India	Tel: +91 80 41132470	E-mail: tsi-india@tsi.com	
China	Tel: +86 10 8251 6588	E-mail: tsibeijing@tsi.com	
Singapore	Tel: +65 6595 6388	E-mail: tsi-singapore@tsi.com	

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